



MHM IS A 501(c)(3) NON-PROFIT
CORPORATION DEDICATED TO THE
DOCUMENTATION, CONSERVATION, AND
PRESERVATION OF FINITE MARITIME
CULTURAL MINNESOTA'S RESOURCES

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Minnesota Archaeology License
24-197

Suburban Lakes Projects Series

White Bear Lake Archaeological Sonar Survey Project 2



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Acknowledgments

Maritime Heritage Minnesota (MHM) thanks Bruce Koenen and Amanda Gronhovd of the Office of the State Archaeologist for their efforts. Thanks to Debra Neutkens, Carter Johnson, and Paul Dols of the *White Bear Press*, and Greta Kaul and Alex Kormann of the *Star Tribune* for their interest in MHM's work. This project could not have been completed in a timely fashion without the consideration of Michael and Karen Kramer for on-land storage of research boat *Anomaly 51* and the use of an SUV to tow the vessel; MHM's SUV burst into flames in July and was a total loss. Lastly, MHM thanks our Board of Trustees Michael F Kramer, Deb Handschin, and Steve Hack for their continued support.

Cover: MHM sonar images and a 1908 plat map of the White Bear Lake area (Fowble and Fitz, 1908, housed at the White Bear Lake Area Historical Society, digitized by MHM).

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Volunteer Diver
Mark Slick



Mascots & Computing Cats



Freddie
Mercury Cat
&
Rodney
McKay Cat



Volunteer Diver
Greg Flanagan



Volunteer Diver
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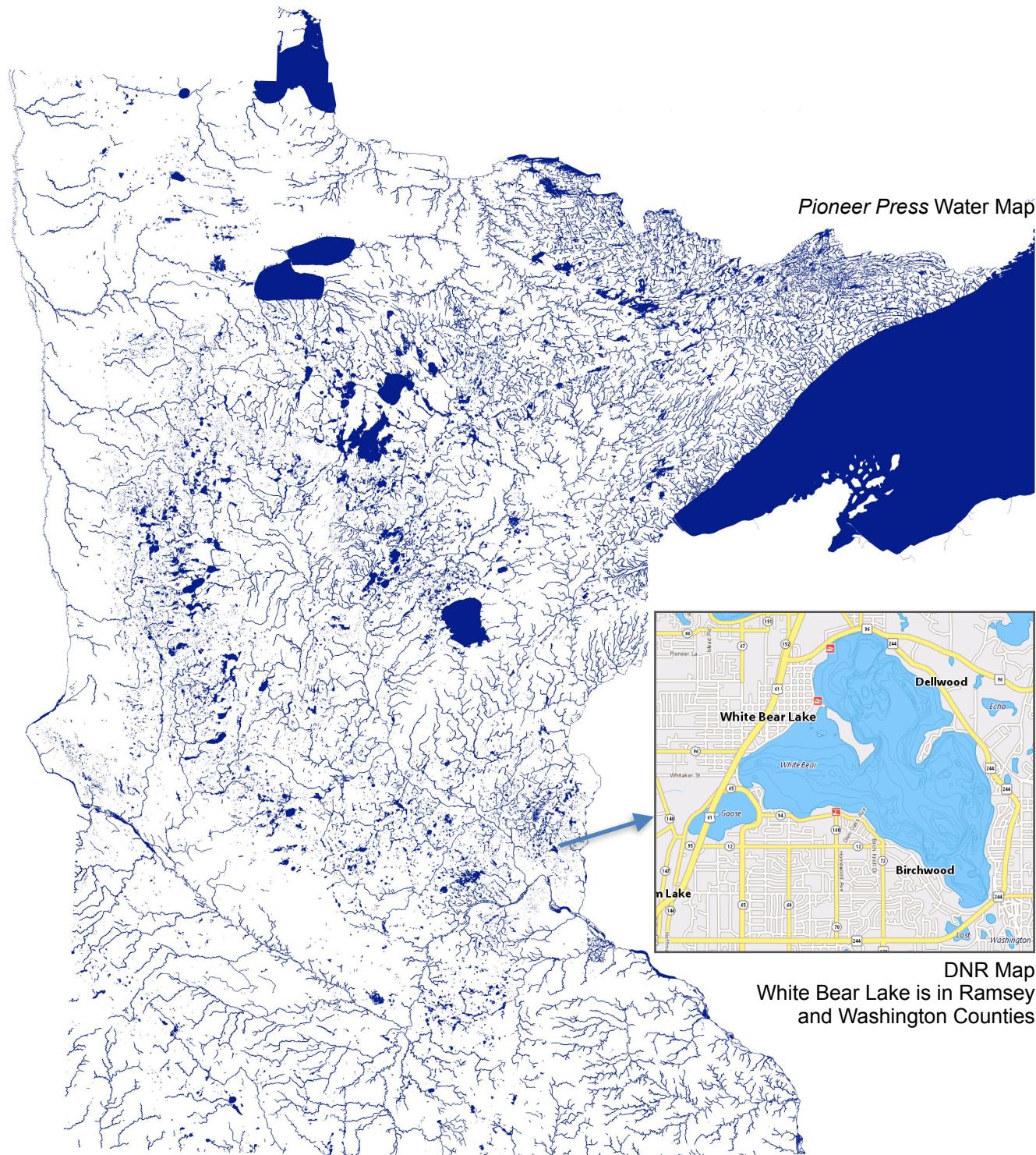
“A small St. Paul-based nonprofit, Maritime Heritage Minnesota (MHM), re-establish[ed] the discipline of underwater archaeology in Minnesota....MHM...conducts groundbreaking nautical archeological and maritime historical research.”

~Steve Elliott, Former Minnesota Historical Society CEO and Director, January 2015

Introduction

Wrecks and the artifacts associated with them tell a story. Removing or otherwise disturbing artifacts, treating them as commodities that can be sold, obliterates that story. Nautical archaeological and maritime sites are finite, and are significant submerged cultural resources. Nautical, maritime, underwater, maritime terrestrial – Maritime Heritage Minnesota's (MHM) deals with all of these types of sites throughout the State of Minnesota. MHM's Mission is to document, conserve, preserve, and when necessary, excavate these finite cultural resources where the welfare of the artifact is paramount. MHM is concerned with protecting our underwater and maritime sites – our shared Maritime History – for their own benefit in order for all Minnesotans to gain the knowledge that can be obtained through their study. MHM's study of wrecks does not include the removal of artifacts or damaging the sites in any way. MHM does not raise wrecks or 'hunt' for 'treasure'. Submerged archaeological sites in Minnesota are subject to the same State statutes as terrestrial sites: the Minnesota Field Archaeology Act (1963), Minnesota Historic Sites Act (1965), the Minnesota Historic District Act (1971), and the Minnesota Private Cemeteries Act (1976) if human remains are associated with a submerged site. Further, the case of *State v. Bollenbach* (1954) and the Federal Abandoned Shipwrecks Act of 1987 provide additional jurisdictional considerations when determining State oversight and "ownership" of resources defined by law as archaeological sites (Marken, Ollendorf, Nunnally, and Anfinson 1997, 3-4). Therefore, just like terrestrial archaeologists working for the State, universities, or with contract firms, underwater archaeologists are required to have the necessary education, appropriate credentials, and hold valid licenses from the Office of the State Archaeologist (OSA).

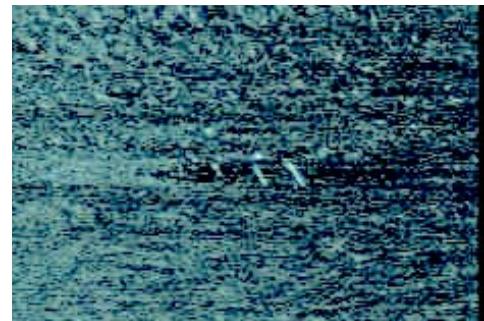
MHM completed a side and down-imaging sonar survey of White Bear Lake in August 2012 and SCUBA reconnaissance took place in 2014 to identify and document certain anomalies. Prior to the beginning of MHM's work, there were no recognized nautical archaeological or maritime sites in White Bear Lake. In 2014, MHM investigated 26 anomalies and there are now four identified wrecks on the bottom of White Bear Lake, three of which were assigned Minnesota Archaeological Site Numbers: Judges Boat Wreck (21-WA-113, formerly Anomaly 29), Steel Boat Wreck 1 (21-WA-114, formerly Anomaly 2), Steel Boat Wreck 2 (21-WA-115, formerly Anomaly 10), and the Aluminum Square Stern Canoe Wreck (Anomaly 12). Additionally, four maritime sites were identified (Mast and Sail [Anomaly 28], Pontoon [Anomaly 22], Boat Lift [Anomaly 46], Ice Fishing House [Anomaly 14]), three large rocks (Anomalies 33, 34, 35), and 15 false targets that were lake bottom contours or vegetation (Anomalies 5, 9, 23, 25, 31, 32, 44, 45, 45.1, 47, 50, 51, 52, 53, 55 [Merriman and Olson 2014, 2012]).



2024 Side and Down-Imaging Sonar Survey

MHM returned to White Bear Lake in July and August 2024 in order to complete a second comprehensive remote sensing side and down imaging sonar survey of the lake using improved sonar technology. After reviewal of the recorded sonar data, another 88 anomalies were identified as possible submerged cultural resources; MHM is confident that one of these targets is a wreck, while a few others are probable wrecks. In addition to these new anomalies, additional sonar images of the known wrecks and sites were recorded for the archaeological record. Lastly, anomalies from the first survey that MHM had not identified to date were located in the new footage. Presented here are the sonar images MHM recorded in 2024 that may be submerged cultural resources that can be investigated in the future using SCUBA reconnaissance and targeted remote sensing. The alphanumeric designations assigned to the anomalies continued from the numbers assigned after the first survey in 2012, beginning with 56 and ending with 143.

Anomaly 117 - Wreck



Anomaly 57 - Possible Wreck



Anomaly 133 - Possible Wreck



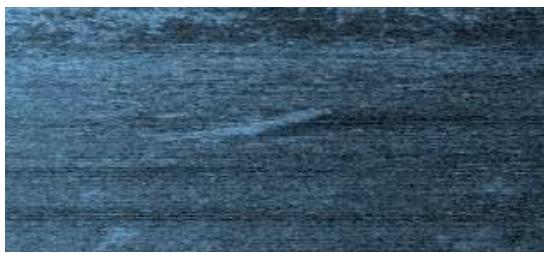
Anomaly 130 - Possible Wreck



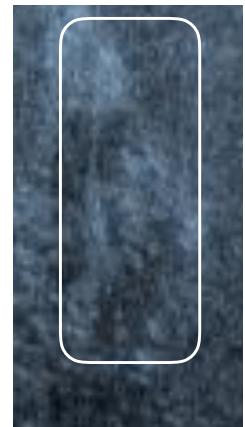
Anomaly 138 - Possible Wreck



Anomaly 91 - Possible Wreck



**Anomaly 132
Large Object**



Anomaly 77 - Possible Wreck



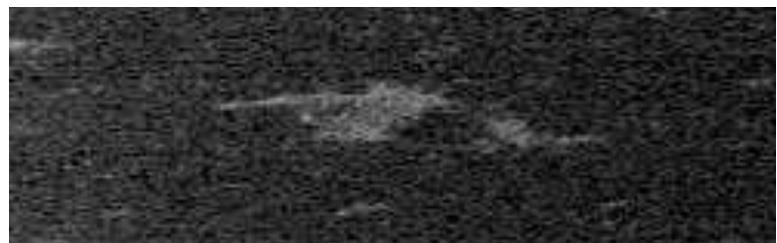
Anomaly 103 - Metal Power Pole



**Anomaly 69 - Outline
Possible Buried Wreck**



Anomaly 136 - Possible Wreck (Sailboat?)



Anomaly 72 - Possible Small Wreck



Anomaly 127 - Unknown Object



Anomaly 70 - Unknown Object



Anomaly 84 - Possible Dock



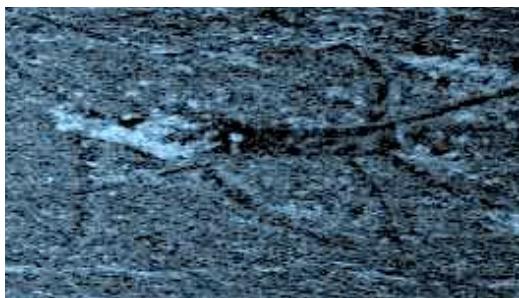
Anomaly 100 - Unknown Object



Anomaly 129 - Possible Wreck



Anomaly 74 - Large Object



Anomaly 125 - Possible Wreck



**Anomaly 115
Possible Wreck**



Anomaly 112 - Outline



Anomaly 66 - Possible Partially Buried Wreck



Anomaly 81 - Unknown Object



Anomaly 90 - Unknown Object



Anomaly 131 - Possible Partially Buried Wreck



Anomaly 96 - Possible Partially Buried Wreck



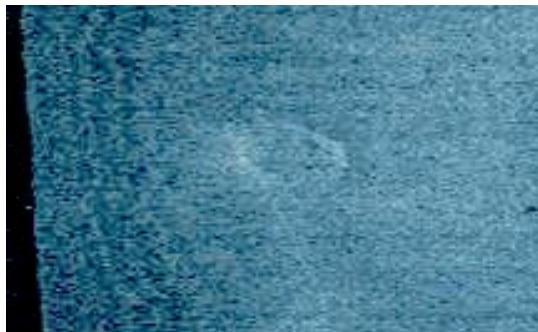
Anomaly 92 - Unknown Object



Anomaly 14 - Possible Capsized Wreck1



Anomaly 110 - Possible Wreck Outline



Anomaly 142 - Possible Wreck



Anomaly 102 - Possible Wreck



Anomaly 123 - Unknown Object



Anomaly 67 - Possible Wreck



Anomaly 122 - Unknown Object



Anomaly 80 - Unknown Large Object



Anomaly 111 - Possible Wreck



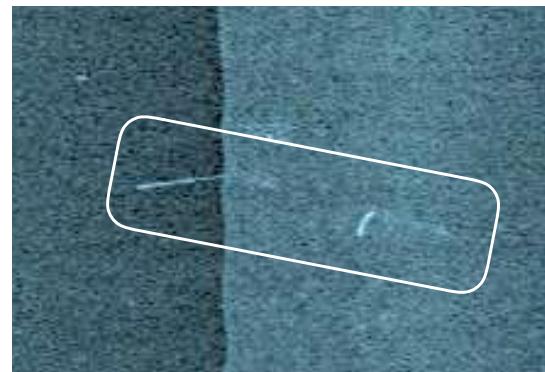
Anomaly 134 - Unknown Object



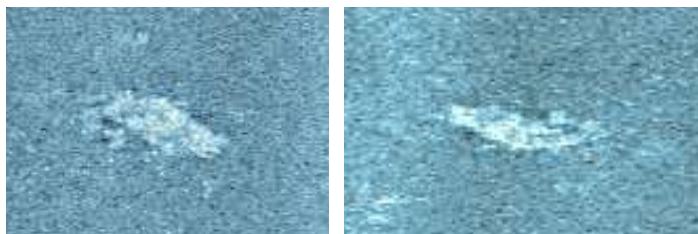
Anomaly 118 - Possible Wreck (Scow?)



Anomaly 107 - Possible Wreck with Mast



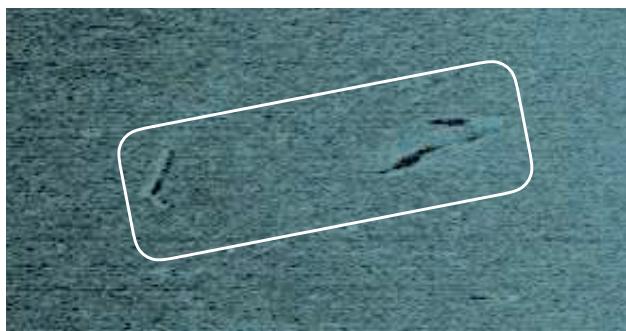
Anomaly 93 - Possible Wreck



Anomaly 105 - Possible Wreck



Anomaly 61 - Possible Buried Wreck



Anomaly 60 - Unknown Object



Anomaly 65 - Possible Wreck



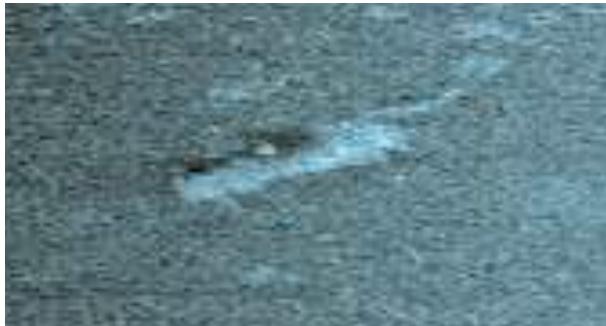
Anomaly 75 - Unknown Rectangle



Anomaly 76 - Unknown Object



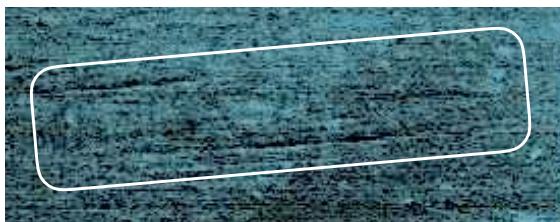
Anomaly 68 - Unknown Object



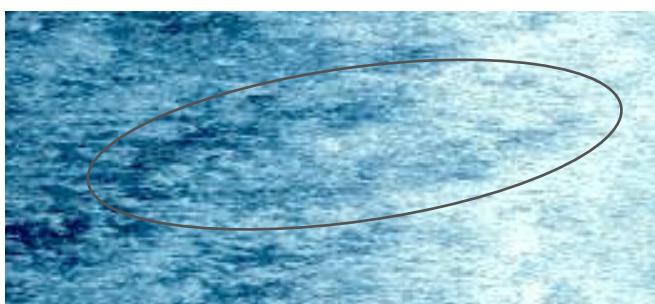
Anomaly 85 - Large Outline



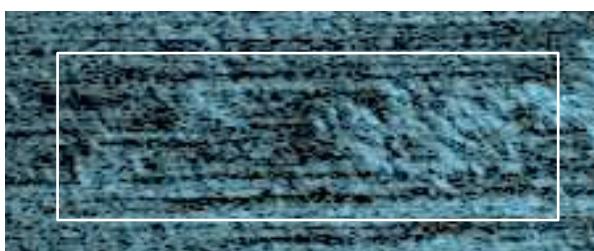
Anomaly 121 - Outline



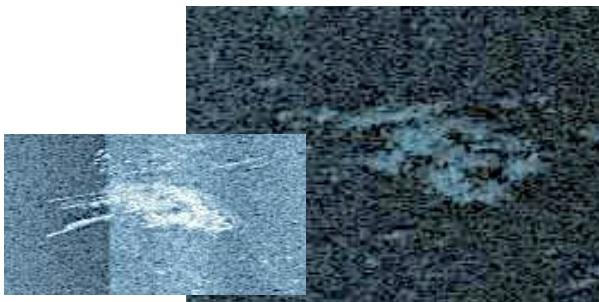
Anomaly 79 - Outline



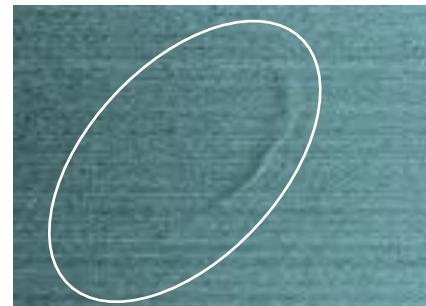
Anomaly 59 - Rectangular Outline



Anomaly 58- Unknown Object



Anomaly 104 - Outline



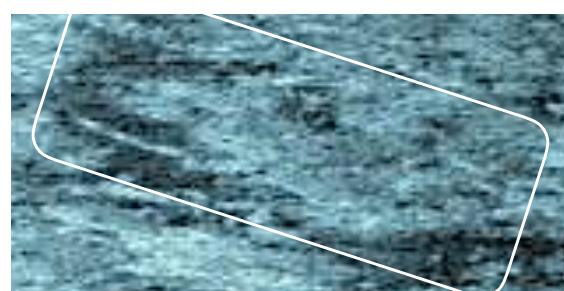
Anomaly 108 - Outline with Shadow



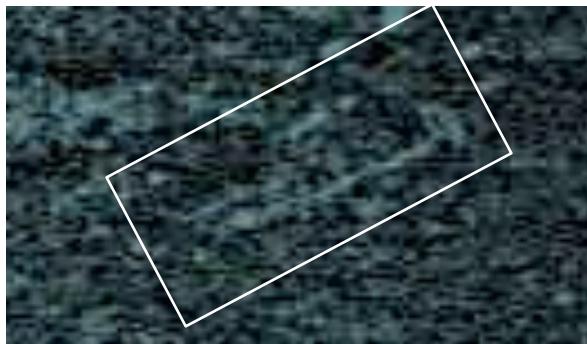
Anomaly 73 - Outline



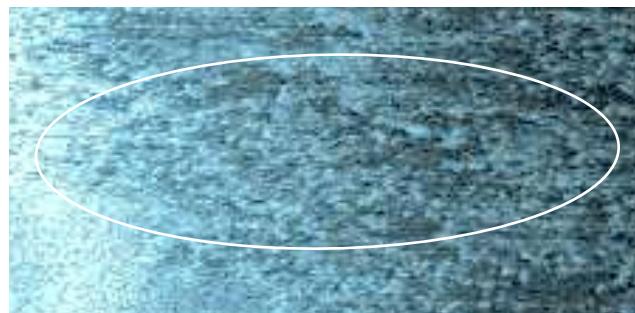
Anomaly 63 - Outline



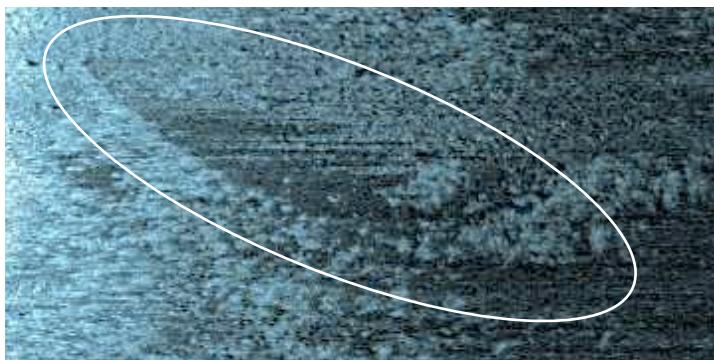
Anomaly 78 - Outline



Anomaly 106 - Outline



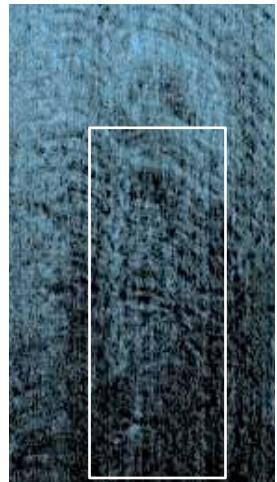
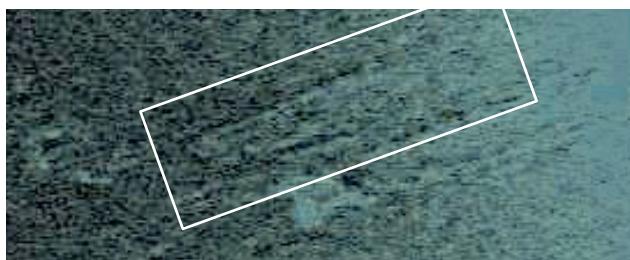
Anomaly 114 - Large Outline



Anomaly 116 - Outline



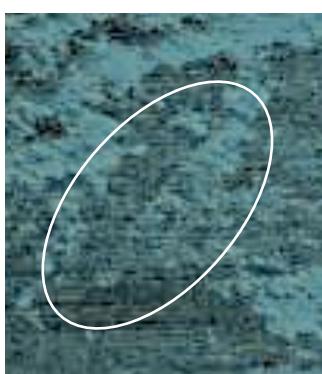
Anomaly 135 - Rectangle



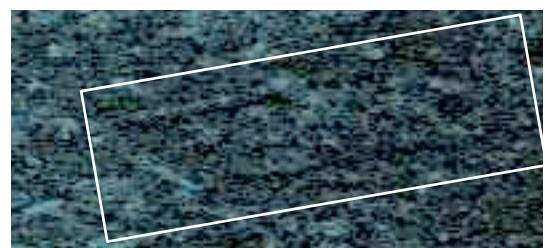
Anomaly 86 - Rectangle



Anomaly 88 - Possible Capsized Wreck with Keel



Anomaly 137 - Rectangle



Anomaly 124 - Depressed Outline



Anomaly 95 - Long Object



Anomaly 101 - Long Object



Anomaly 99 - Long Object



Anomaly 119 Long Object



Anomaly 126 - Partially Buried Object



Anomaly 97 - Long Object



Anomaly 120 - Irregularly Shaped Object



Anomaly 56 - Long Object



Anomaly 87 - Long Object



Anomaly 64 - Unknown



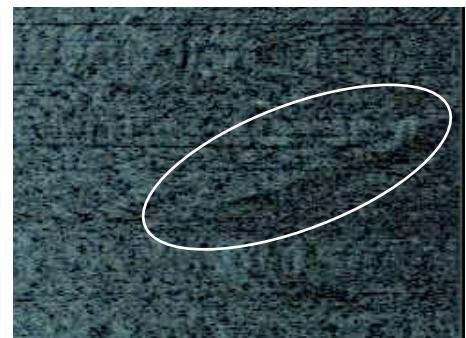
Anomaly 89 - Unknown



Anomaly 94 - Long Object



Anomaly 109 - Long Object



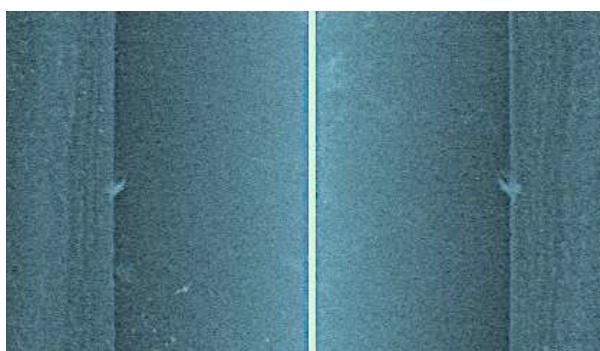
Anomaly 82 - Sharp Object



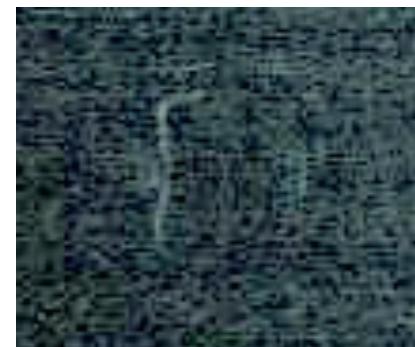
Anomaly 139 - Irregular Object



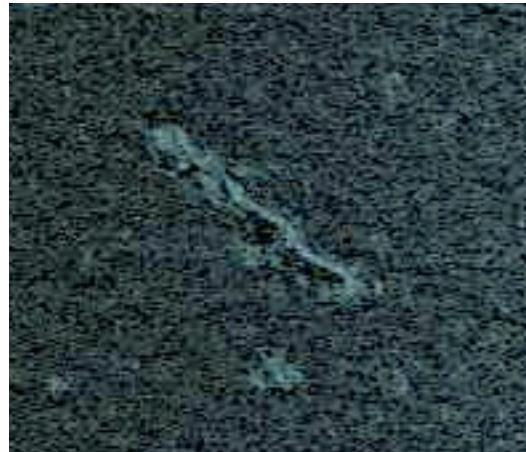
Anomaly 143 - Possible Wreck - Down Image



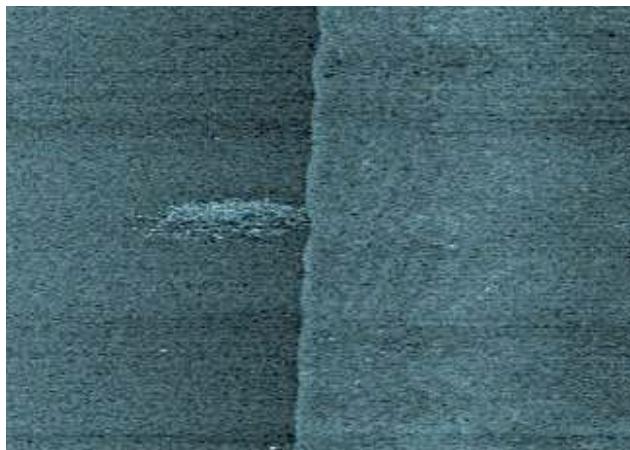
Anomaly 83 - Outline



Anomaly 71 - Long Object



Anomaly 113 - Water Column Object



Anomaly 98-Long Thin Object



Anomaly 140 - L-Shaped Object



Anomaly 128 - L-Shaped Object



Anomaly Analysis

After reviewing the White Bear Lake sonar data recorded in 2024, MHM has identified Anomaly 117 as a new wreck on the lake bottom. Often the intensity of the sonar return can indicate whether an anomaly is constructed from wood, metal, or fiberglass; this wreck may be fabricated from metal. Several other anomalies may be wrecks that are standing off the lake bottom; the most promising examples are A62, A133, A130, A91, A77, A138, A136, and A72. Additionally, Anomaly 88 appears to be a capsized hull with a keel protruding from the rounded bottom. Other possible wrecks appear as triangular or rectangular outlines on the lake bottom or in the weeds. Anomaly 85 is the best example of a possible wreck that appears as an outline but its size - 40 feet long - suggest it is not a wreck. The same theory holds true for Anomaly 114 since it is 65 feet long. However, White Bear Lake did have a few larger boats that carried passengers and freight in the late 19th and early 20th centuries. Therefore, it is not impossible that A85 and A114 are wrecks, but it is unlikely. Other very good possible wrecks that appear as nearly buried and only in outline include A57, A104, A79, and A121. Another form of acoustical signature that suggests wrecked watercraft are the 'partially-buried wrecks on their side' that MHM comes across in every body of water that is surveyed. Most often these anomalies are identified as logs or bottom contours. White Bear Lake's possible wrecks-on-their-side are Anomalies 66, 131, and 96.

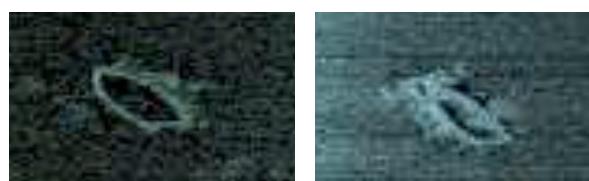
Other identified anomalies that MHM suspects are not wrecks include a possible dock (A84), an obvious metal power pole with rectangular base and latticed design (A103), odd shapes (A80, A13), and a detailed large curled object that looks very interesting (A132). Anomalies 100 and 123 have sharp angles comprising their odd shapes that suggest they are human-made debris. Anomaly 71 has two clear acoustical signatures from different transects and those images do not resemble each other, likely due to water turbulence by passing watercraft that causes the sonar transducer to rock athwartships. Anomaly 71 is interesting, but due to its size, it may be a tree. Lastly, in considering the 88 'new' anomalies identified during the project, MHM is confident that the majority of them will be 'false targets' not made by humans such as trees, rocks, and lake bottom contours.

Lastly, this survey produced another image of Anomaly 17 that was designated during the first survey in 2012; it has not yet been dove upon and this second image suggests it may be a human-made object. Also, the 2012 Anomalies 24 and 26 were located in the 2024 footage and they are false targets; diving on them is not needed. Anomaly 66 was located in the 2012 sonar footage with nearly identical GPS coordinates. The 2024 image of the object is much clearer and is worthy of investigation. Further, every wreck identified by MHM during the 2012 sonar survey and the 2014 underwater archaeological investigations was re-scanned with the improved sonar technology.

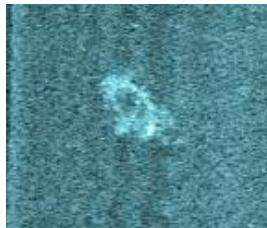
2024: Judges Boat Wreck, 21-WA-113



2024: Steel Boat Wreck 1, 21-WA-114



2024: Steel Boat Wreck 2, 21-WA-115



2024: Aluminum Square Stern Canoe Wreck Anomaly 10



Conclusion

Underwater archaeological projects are undertaken to answer specific questions about the anomalies recorded during remote-sensing surveys. The types of questions that can and will be answered about anomalies and sites by using SCUBA reconnaissance include their type/identification, age, construction attributes, context, and provenience. Several research tools will be used including line searches, underwater photography and video, measured drawings, triangulation, and photogrammetry – all dependent on the site being investigated. Further, targeted sonar scanning may allow MHM to determine the true nature (false targets such as vegetation, rocks, bottom contours) of particular anomalies without SCUBA reconnaissance. Further, MHM's ethical, responsible, and experienced volunteers greatly assist our projects to educate a wide audience in the proper treatment of all Minnesota's finite underwater and nautical cultural resources – wrecks, maritime infrastructure, artifact clusters, and lone artifacts that can be found on the bottom of our lakes, rivers, and streams throughout the state.

Future fieldwork in White Bear Lake would initially focus on the SCUBA investigations of anomalies that MHM has identified as a wreck (A117), a number of the possible wrecks (A62, A133, A130, A91, A77, A138, A136, A72, A143, A57, A104, A79, A121, 66, A131, A96, A114, A85), the power pole (A103), the large curved object (A132), and the odd shapes with sharp lines (A80, A13, A100, A123). MHM will conduct projects to maximize data retrieval through the utilization of effective archaeological methods and theory. The collected data will be analyzed and Minnesota Archaeological Site Forms will be completed and filed with the Office of the State Archaeologist when appropriate. When particular criteria are met, wrecks and other types of maritime sites will be designated as Minnesota Archaeological Sites with a distinct alphanumeric Site Number. The underwater archaeological and maritime historical information produced from all White Bear Lake Projects allows MHM to expand and augment our collective knowledge of Minnesota's finite submerged cultural resources.

References

Marken, M.W., A. Ollendorf, P. Nunnally, and S. Anfinson. 1997. *Beneath Minnesota Waters: Minnesota's Submerged Cultural Resources Preservation Plan*. Summit EnviroSolutions, Inc. and Braun Intertec, St. Paul. Report prepared for the State Historic Preservation Office, Minnesota Historical Society: St. Paul, MN.

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